

Application No.: 10/529,620
Amendment Dated: August 20, 2010
Reply to Office Action of: August 3, 2010

MTS-3512US

Remarks/Arguments:

Claims 1, 4, 6, 8-13 and 17 have been rejected under 35 U.S.C. §103 (a) as being unpatentable over Moriyama (US 2004/0198430) in view of Jones (US 6,137,802). The rejection is respectfully traversed for the reasons set forth below.

Applicants acknowledge with thanks the courtesy extended to their representative by Examiner Kao during the telephone interview of August 17, 2010. During the course of the interview, Applicants' representative provided the argument set forth below.

On page 7 of the Official Action, the Examiner argues that Applicants' claimed features are described in Jones at Col. 6, lines 53-67 and Col. 7, lines 1-16. Applicants respectfully disagree.

As set forth in Applicants' claim 1, 18 lines of text from the bottom of the claim, Applicants include the step of switching from:

a) said wireless data communication ... to b) said wired data communication ...

Applicants also claim the feature of using wired data communication to switch from:

a) said wired data communication ... to b) said wireless data communication ...

Thus, as shown in the marked-up copy of claim 1 (enclosed), Applicants are claiming the feature of switching from wireless communication to wired communication. Applicants are also claiming the feature of switching from wired communication to wireless communication.

At the line specified by the Examiner, Jones does not switch between wireless and wired communication. At the end of Col. 6 and the beginning of Col. 7 of Jones, Jones discloses starting with wireless communication and ending with wireless communication (please note the word "maintain" at Col. 7, line 2). At Col. 7, lines 9-13, Jones discloses starting with wired communication and ending with wired communication (again note the word "maintain" at Col. 7, line 13).

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Thus, Jones discloses the feature of going from wireless to wireless. Jones also discloses the feature of going from wired to wired. This is completely different than Applicants' claim 1 where wired to wireless and wireless to wired switching is disclosed. Accordingly, Applicants' claim 1 is patentable over the art of record.

Applicants' claims 4, 6, 8, 9 and 10 are all independent claims which, while not identical to claim 1, are also patentable over the art of record for reasons similar to those set forth above with regard to claim 1.

The remaining claims set forth in the rejection statement are patentable by virtue of their dependency on allowable independent claims.

Claim 3 is a rejected dependent claim which is patentable by virtue of its dependency on claim 1. Claim 15 is a separately rejected independent claim which is patentable for reasons similar to those set forth above with regard to claim 1.

Claim 16 is a rejected dependent claim which is patentable by virtue of its dependency on allowable independent claim 1.

This application is in condition for allowance which action is respectfully requested.

Respectfully submitted,

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Encl.: Marked-Up Copy of Claim 1

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1) responsive to said first-wired connection detecting section detecting that said wired connection between said wired communication unit and said second wired communication unit exists, uses said wireless data communication to signal said second change-over switch to switch from a) said wireless data communication using said second wireless communication unit to b) said wired data communication using said second wired communication unit, and

From
To

2) responsive to said application detecting that said wireless connection between said first wireless communication unit and said second wireless communication unit exists, uses said wired data communication to signal said second change-over switch to switch from a) said wired data communication using said second wired communication unit to b) said wireless data communication using said second wireless communication unit;

From
To

wherein said first wired communication unit and said second wired communication unit communicate using said wired data communication after said first change-over switch and said second change-over switch have been switched to said wired data communication; and

wherein said first wireless communication unit and said second wireless communication unit communicate using said wireless data communication after said first change-over switch and said second change-over switch have been switched to said wireless data communication.

2. (Cancelled)

3. (Currently Amended) The wireless communication system according to claim 1, wherein said first ~~wireless~~ communication unit further includes first signal level adjusting ~~means~~unit configured to adjust, when said first wired connection detecting ~~means~~section detects that said wired connection is being performed, a signal level so that said wired data communication is performed using a signal level smaller than the signal level necessary for said wireless data communication.

4. (Currently Amended) A wireless-communication unit comprising:

a first communication unit including:

determine if the appropriate network routing is available to maintain all the user's wireless connections. The results of the ping operation and other user preferences are then used to determine if a switch between networking services should be performed.

From To Similarly, the radio hardware 56 is constructed in such a manner that it will automatically detect a base station or other transmitting node to which connection can be made. In the case where a wired connection is in progress, the wireless connection is utilized to "ping" an appropriate network station with which the device is communicating via the wired link. This will determine if the appropriate network routing is available to maintain all the users' wired connections. The device utilizes the result of the ping operation and other user preferences to determine if a switch between networking services should be performed.

For the case when neither wired nor wireless services is being utilized, but the networks are detected, the device "pings" the appropriate, predetermined (based on user preferences) network stations to determine if either network service is available and compatible. Then, based on user preferences, the device determines the preferred connection, in accordance with the present invention as described below.

OPERATION

At a high level, the automatic media or network switching method (and the apparatus or device employing the method) has five states of operation. These states will be described independently in the following sections to enhance clarity, with reference to the diagram of FIG. 6 and to the flow charts that follow (FIGS. 7-10).

State 0 (600)—Determine Services (Searching)

When the user device is started up (i.e., first turned on, or when no communications services are present), the device enters a "search" mode. In this mode the device continually attempts to detect a base station via a wireless link, and checks for the presence of a wired connection. The device stays in this state until either of the services is available. If both of the services become available at the same time the device enters State 3 (603), the Service Evaluation state.

FIG. 7 shows a flow chart for operation while in State 0 (600). It should be pointed out that upon leaving State 0 (600), the device is either connected to the wired network (701), connected to the wireless network (702), or both services are available (703) and the device enters State 3 (603). In this regard, the transitions between states are labeled with reference character 1-12 in FIG. 6, and these same reference characters are repeated at corresponding transition points in FIGS. 7-10.

When the device is utilizing a wired or a wireless connection, it has completed the necessary steps to perform a connection setup. At a minimum, this includes configuring the wired/wireless network information and activating the wired/wireless hardware (704), as shown in FIG. 7. Setup may further include, for example, virtual circuit assignment in the case of an ATM network and assigning of a network address to the card 70 (70a) and the host computer.

State 1 (601)—Wired Services Utilized

Referring to FIG. 8, State 1 (601) is entered when a compatible wired service medium or network connection is sensed and being utilized or when a wired connection is being utilized after determining that it is the preferred connection when the wireless service medium is also avail-

able. In this state the device has detected, via the appropriate carrier signal, that it is connected to a compatible wired backbone and has performed the necessary steps to utilize this networking connection.

Accordingly, the present invention allows the user and supporting software to communicate to the network via the wired link (801), while periodically attempting (802) to detect a base station via a wireless link.

State 2 (602)—Wireless Services Utilized

Referring still to FIG. 8, State 2 (602) is entered when a wireless link to a base station is established with a compatible backbone network or when a wireless service medium or connection is being utilized after determining that it is the preferred connection when a wired service medium is also available. In this state the device has detected a wireless base station and has determined that it is connected to a compatible backbone network. The interface card 70 (70a) has also performed the necessary steps to utilize this networking connection.

Accordingly, the present invention allows the user and supporting software to communicate to the network via the wireless service medium (803), while periodically attempting (804) to connect to a wired service medium.

For both States 1 and 2, the device remains in the state until either the network connection via this service medium is unavailable, causing a return to State 0 (600), or until the other service medium becomes available, causing a return to State 3 (603), where the two service mediums are evaluated. FIG. 8 shows flow charts for both States 1 and 2.

It is noted that State 3 (603) is entered in the event that both wired and wireless service mediums become available. In this state the device determines, based on network loading and throughput, and user options for quality of service, i.e., the desired throughput (bit rate), latency, and jitter (latency variance), which service medium should be selected.

When entering State 3 (603) from either State 1 (601) or State 2 (602), the existing service medium network connection is maintained while determining which of the service mediums is desired. In other words, the user's services will not be interrupted or disconnected while monitoring for the connection quality of the other service medium.

State 3 (603)—Service Evaluation

FIG. 9 shows a flow chart for State 3 (603). Since both wired and wireless service mediums are available when this state is entered, the device leaves this state connected to one of the service mediums. A series of decisions (901-906) to are executed to determine whether a medium switch is warranted, or desired by the user, using predetermined criteria. In this manner, the device can either determine that the service medium should be switched (907), or remain with the current service medium by returning (908, 909) to either State 1 (601) or State 2 (602). At the completion of the State 3 (603), a timer in the device is set and the device remains in either State 1 (601) or State 2 (602) until this timer expires. This substantially prevents the device from toggling between networks when both networks are available. When the device determines that the service medium should be switched, it enters State 4 (604), the Transition State.

State 4 (604)—Transition

When it has been determined that the device should transition from one service medium to the other, the device